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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/757,253	01/13/2004	Denise M. Eppich	MI22-2467	4387
21567	7590	03/30/2005	EXAMINER	
WELLS ST. JOHN P.S. 601 W. FIRST AVENUE, SUITE 1300 SPOKANE, WA 99201			LEE, HSIEN MING	
			ART UNIT	PAPER NUMBER
			2823	

DATE MAILED: 03/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/757,253	<b>Applicant(s)</b> EPPICH ET AL.	
	<b>Examiner</b> Hsien-ming Lee	<b>Art Unit</b> 2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 31-39, 41, 42, 44, 46-48, 50-52 and 55-57 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 41, 42, 44, 46-48, 50-52 and 55-57 is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☒ Claim(s) 31-39 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 1/13/04 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>030205</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### *Claim Objections*

1. Claim 31 is objected to because of the following informalities: the phrase “to a thickness of greater than 20 Å” does not define an upper limit and thus renders indefinite. See M.P.E.P. 2163.05 III range limitation. Appropriate correction is required.

### *Allowable Subject Matter*

2. Claims 41, 42, 44, 46-48, 50-52 and 55-57 are allowed.
3. Claims 32-39 are objected to as being dependent upon an objected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

4. The following is a statement of reasons for the indication of allowable subject matter:

Zheng et al. to US 6,794,232 teach a method of forming a CMOS device, comprising: providing substrate comprising a PMOS gate region and an NMOS gate region; forming a gate dielectric layer 606 over the PMOS gate region and the NMOS gate region (Fig.8); forming a bi-layer stacks of relatively thick Al and thin TiN for NMOS and bi-layer stacks of relatively thick Pd and thin TiN for PMOS (col. 3, lines 30-33) to manipulate work functions of the PMOS and the NMOS, wherein the TiN thickness is in a range of 10~200 angstroms (col. 6, lines 20-21).

In re claim 31, Zheng et al. at least neither teach nor suggest forming a thin metal-containing material to be covered the PMOS and NMOS gate regions, the thin metal-containing material being formed to a thickness of less than or equal to about 20 angstroms and being formed over a thick metal-containing material over the PMOS gate region.

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In re claim 44, Zheng et al. also neither teach nor suggest forming a metal-containing material over a dielectric layer, the metal-containing material being formed with less than or equal to about 70 ALD cycles, wherein the metal-containing material comprises one or more of titanium silicide, tantalum silicide, hafnium silicide and tungsten silicide.

In re claim 55, Zheng et al. also neither teach nor suggest forming a capacitor electrode ; providing a metal-containing material between the capacitor electrode and a capacitor dielectric layer, the metal-containing material having a thickness of no more than about 20 angstroms, wherein the metal-containing material comprises one or more of titanium silicide, tantalum silicide, hafnium silicide and tungsten silicide.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hsien-ming Lee whose telephone number is 571-272-1863. The examiner can normally be reached on Tuesday-Thursday (8:00 ~ 6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 571-272-1855. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hsien-ming Lee

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Primary Examiner  
Art Unit 2823

March 24, 2005

**HSIEN-MING LEE**  
**PRIMARY EXAMINER**

3/24/05